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## ON THE BIONOMICS OF SOME HYMENOPTERA FROM A BUR OAK CYNIPID GALL.

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(Continued from page 143)

### THE OUTER GALL GROUP

These are the species of Hymenoptera that derive their existence from the woody outer portion of the *Disholcaspis mamma* gall. This group is independent of the larval cell and its insects from the bionomic standpoint, excepting that they are obligated to the gall former for their abode. These two groups exert no effect whether beneficial or injurious, directly upon one another.

#### *Synergus campanula* O. S.

Judging by the relatively primitive nature of the Cynipidae and their gall inhabiting propensities, and by the large numbers in which *Synergus campanula* O. S. comes from the *mamma* gall, this species is probably the original occupant of the outer gall. It is one of the several smaller species found in this place, reaching a length of only one and eight tenths millimeters. Its colors are various shades of brown, and the antennae filiform and undifferentiated, that is, without the elbow and ring segments of the Chalcidoidea. By these characteristics it can readily be separated from other species living here. It is the third species found in the present gall that belongs to the family Cynipidae, and represents a third habit—namely that of inquiline.

The inquiline cynipid easily exceeded all other species in this gall in the numbers it produced. It was uncommon to find a gall taken from the particular bur oak concerned here, that did not harbor one or more larvae of this species. Of forty-seven miscellaneous galls dissected, only four had no small exit holes in the surface, or larvae or pupae still in the outer part. According to the number of adults reared from the outer gall not less than fifty percent were *S. campanula*. Numbers of holes of immature stages seen per gall ranged from none to thirty-three, with a total of two hundred sixty-eight individuals represented by either exit holes or by immature stages. This is an average for all galls examined of five and seventy-two hundredths individuals per gall. Ten galls were especially dissected and the larval cells and the outer parts isolated. Nine of the ten galls yielded *campanula* ranging from one to ten per gall, and a total average of three and seven tenths individuals for the ten galls. In other galls not included in this series, the substance of the woody outer layer had been mined by larvae of coleopterous predators, probably *Cymatodera undulata* Say, Cleridae, as was determined by rearing one such, and the inquilines had been consumed. Extensive mining such as is not uncommonly present in these galls, may then be regarded as an indicator that many inquiline larvae had been there and attracted the attention of the predator. In the last analysis it is estimated that no less than an average of four *campanula* developed in the galls of this tree, all the remainder probably being other inquilines.

The larvae and pupae of *campanula* occupy minute cells formed by the larvae near the outer surface of the gall. The majority occur in the basal half of the gall, and especially in the two lobes that encompass the oak stem. In instances of extreme infestation, two layers of such cells have been observed in these more easily penetrated lobes. The full-sized cells are oval in shape and measure one and forty-six hundredths millimeters by one and fourteen hundredths millimeters. The whitish larvae fill the cavity quite snugly. They have lost all capacity for locomotion, and when irritated can express objection only by a chewing motion of the mandibles that occupy a quite superficial place on the front of the head.

Pupae were found on July 20, 1923 and from July 2 to July 7, 1924. In the instances of 1924, the pupa stage was always twelve days. When newly transformed, all parts of the pupa body are pale whitish. In two days the eyes have turned reddish brown, while the rest of the insect is still whitish. When five days old the eyes are deep pink in color and the posterior region of the abdomen was turning to a shade of brown. At the age of eight days the venter of the abdomen had become light brown, and other parts of the body deep brown, excepting the appendages including the mouth parts, which were still pale brown. On the eleventh day, when the pupa skin was shed, the parts were all quite normally colored, except that as usual in insects, the hues turned to a deeper shade in the first few days of adult life.

Adults appeared during the period of May 1, 1923 to June 10, 1923, and were seen alive as late as June 29, of that year. In 1924, this stage emerged from June 30 to July 29, while a few were found alive in a cage on June 19, 1925, and eighteen had already come out and died on that date. These limited data lead to the conclusion that adults are abroad at least a month to a month and a half, the particular dates varying with the years, but this period is probably from June 10 to July 20 in the average year. However, because the fresh *mamma* gall does not exist in this period, *campanula* obviously becomes established in another host, which may be the mature gall of *flavipes*, although this has not been observed. It would scarcely be expected that they reoccupy the old *mamma* galls of the lot from which they emerged, and much less that such delicate individuals could fly far from the trees to other situations. Nevertheless, when the diversity and complexity of the life cycles of many Cynipidae are taken into account, one must remain open-minded to the possibility of a discovery of heretofore unknown phenomena even among the inquiline species of this family.

Gillette (7) records *S. campanula* having been reared from the gall of the Cynipidae, *Holcaspis duricoria* Bass. on *Quercus bicolor*, *H. globulus* Fitch, and *Biorrhiza torticornis* Walsh. *Duricoria*, according to Kinsey, is another variety of *D. mamma*, and the same authority is inclined to believe that *globulus* is still another variety of the same form.

#### *Synergus oneratus* Harris

One specimen from this gall was determined as *Synergus oneratus* Harris, which came forth as adult on July 25, 1924. Others of this species may have been present. It was probably also from the outer portion of the gall. According to Gillette (7), it has also been obtained from the galls of *Holcaspis globulus*, *H. rubens* Gill., *Cynips strobilana* O. S., and *Dryophanta brevipennata* Gill.

*Callimome* sp.

The species that ranks second in the abundance of individuals reared from the outer gall layer is an undescribed member of the genus *Callimome*, family Callimomidae, Chalcidoidea, Hymenoptera. It also is a small species only two millimeters long, metallic blue, excepting the pale tarsi; antennae thick and generally held convergent at the bases and tips. The female, like that of its fellow Callimomid, *Syntomaspis racemariae*, carries a conspicuous ovipositor. Obviously the eggs of the species are inserted into the outer division of a gall before it is full-grown. Contrast the size of the body and egg laying structure of *Callimome* sp. with the same features in its relative *racemariae*, which is no less than three times as large in both these respects, and whose part in the composition of the gall life is as parasite of the gall maker dwelling in the inner confines of the gall. It suggests that perhaps originally one of the factors determining the choice of hosts of these two species was the simple matter of bodily size. The dimensions of *Callimome* sp. fit it well for occupying a fairly minute habitat in the outer layer whereas the shortness of its ovipositor precludes its piercing the gall to the larval cell to parasitize the gall maker. And if *Callimome* sp. proves to be phytophagous as is now believed, the adoption of this food habit may have been strongly influenced by this factor, the length of its ovipositor.

Most of the rearing records for *Callimome* sp. were obtained in 1923. Fewer galls occurred in 1924. The larva and pupa stages have not been isolated, but it is certain that these stages are spent in tiny cells in the woody outer part of the gall. In the series of ten galls in which the central and outer parts were separated, five yielded from one to five each of this species, all reared from the outer portion. Furthermore, one adult female was found dead in a small oval subsurface cell, which instance verifies the place occupied by this species. From other larger lots of galls, the adult began to appear on April 24th, 1923, and continued to come as late as May 15th, 1923, or over a period of three weeks. The small number reared in 1924 appeared between May 20 and May 30, which were again distinctly retarded as compared with the records for 1923. *Callimome* sp. thus emerged between April 24 and May 15th, 1923, and between about May 20 and May 30, 1924. In this general period the *mamma* gall is not developing, hence if the species is not limited to the galls of the bur oak, it must infest the midrib gall of *D. flavipes*, which is then in the process of growth, providing it is limited to this species of gall insect. But first hand studies have not been made.

*Ormyrus ventricosus* Ashm.

The family Callimomidae was represented further by one specimen determined as *Ormyrus ventricosus* Ashm. It is believed to have come from the outer portion of this gall. It was previously reared (8) from the oak gall of *Andricus ventricosus*, Cynipidae. Kinsey provided the interesting information that the *ventricosus* gall is almost exactly the shape of the *mamma* gall, although made by an insect of a different genus on another tree.

*Pteromalidae* genus species.

Not uncommon among the adults secured from the *mamma* gall was another small chalcid, family Pteromalidae. Its more definite systematic position has not been determined to date. In size it compares closely with *Callimome* sp.,

neither is its color distinctive, but the female lacks the exerted ovipositor, and the antennae are more geniculate and do not have a banana-shaped flagellum as is present in *Callimome* sp. All evidence points to the outer gall-inhabiting nature of Pteromalid sp. One dead adult was removed from the outer surface of the gall, and two emerged from this part of two other galls kept for special observation. Only the adult has been recognized up to the present time. The earliest individuals obtained from the cages developed on April 24, 1923, others on April 25, April 28, and still others on May 7, 8, and 9. The small number reared in 1924 became adult between May 20 and May 25. The records for both years are probably subnormal for natural conditions. In regard to the connection of this species with others peculiar to the *mamma* gall, it is perhaps in the same category as *Callimome* sp., and may function as an inquiline.

*Zatropis* sp.

Another unnamed species of Pteromalidae, and assigned to the genus *Zatropis*, appeared from this gall in small numbers in 1923. The feature that separates it from other forms peculiar to this gall is the sprinkling of shiny silvery hairs on the dorsum of the head and thorax. More than thirty specimens emerged perhaps from small oval cells such as are known to be occupied by the other species already described from the outer portion of the gall. The galls were taken from the host tree on April 12, 1923, and the first *Zatropis* appeared from them on April 22, of that year. Light emergence continued well distributed over the following two and one half weeks, the last individual making its exit on May 9, 1923. This species was not reared in 1924. That it is an outer gall inhabiting species was ascertained by rearing several adults from these portions of the gall carved away from their larval cells. Like *Callimome* sp. and the unnamed Pteromalid above, *Zatropis* would seem to have similar habits, being concurrent with them.

*Eupelmus macrocarpae* Ashmead

Seven specimens of *Eupelmus macrocarpae* Ash. came from the galls between April 25, 1923 and May 15, 1923. Two of these came from galls especially prepared for study of the distribution of their fauna. From these instances it is known that they appeared from the outer portion of the gall, one on May 1, the other on May 13, 1923. None were obtained in 1924. This species is also a chalcid, a member of the family Eupelmidae. From head to tip of the pale wings folded flat upon the back it measures two and sixty hundredths millimeters. The color is shiny black, except the scutellum which is tinged with brown, and the legs which are yellowish white. There is a conspicuous Y-shaped depression on the pronotum.

*Eupelmus* species.

A second species of *Eupelmus*, as yet not described and named, is represented from this gall by two individuals, one reared on May 11, 1923, and the other between May 20 and May 25, 1924. Presumably they also occupied the outer gall in their immature stages, and along with the other occupants of the outer gall, may give rise to a brood on *flavipes* and later another, represented by the two individuals above, in the *mamma* gall.

Eurytomidae

Forty-two specimens of the chalcid family Eurytomidae were derived from



the *D. mamma* gall and retained by the writer for taxonomic study. Hence, they are not identified positively at this time beyond the category of family, but according to provisional study seem to represent six species. The Eurytomidae are distinguishable from the other chalcids reared from the present gall by the transversely strap-shaped pronotum, and the deep punctures on most of the body, except the gaster which is polished and smooth, and distinctly compressed. The species are for the most part black or brown, but one of them has conspicuous bright yellow markings. The smallest species is one and eight tenths millimeters; the largest is four millimeters long.

The adult emergence records for all the Eurytomidae as a group and regardless of species are as follows: in 1923, the earliest individuals appeared on April 20, and the latest on the eighth of May, although ten came forth on unknown dates between May 8 and June 29, but probably during May, inasmuch as twenty-two of the total obtained in both years emerged between April 20 and May 8, 1923. One individual was reared from the outer part of a gall isolated from its larval cell, from which fact it seems that the Eurytomidae larvae and pupae occupy cavities in the outer gall layer. This belief is further substantiated by results from cutting out the larval cells of some galls and rearing the larvae secured therefrom. Members of this family were never developed from such cells or larvae. In 1924, four adults appeared between May 6 and May 20; four between May 20 and 25; and two after May 25, one of the latter having been taken alive in a cage on June 22. Five of the six provisional species were represented among the above ten specimens of 1924, and five likewise occurred in the material reared in 1923.

#### BIONOMIC RELATIONS OF THE OUTER GALL CHALCIDOIDEA

The part each of the chalcid species from the outer layer plays in the life of the other, the cynipid inquilines (*Synergus* spp.), and the gall, is known at this time only from rearing records. The significant rearing data for all the species is tabulated below.

Table II. Emergence Summary of The Outer Gall Group

Family	Genus	Species	1923 Emergence		1924 Emergence	
			First	Last	First	Last
Cynipidae	<i>Synergus</i>	<i>campanula</i>	May 1	June 10	June 31	July 29
Cynipidae	<i>Synergus</i>	<i>oneratus</i>			One on July 25	
Callimoridae	<i>Callimome</i>	sp.	April 24	May 15	May 20?	May 30
Callimoridae	<i>Ormyrus</i>	<i>ventricosus</i>				
Pteromalidae	gen.	sp.	April 24	May 9	May 20	May 25
Pteromalidae	<i>Zatropis</i>	sp.	April 22	May 9		
Eupelmidae	<i>Eupelmus</i>	<i>macrocarpa</i>	April 25	May 15		
Eupelmidae	<i>Eupelmus</i>	sp.	One on	May 11		
Eurytomidae	Probably	six species	April 20	May 8	May 6	May 25

The extreme dates within which the adult insects from the outer gall layer of *Disholcaspis mamma* came in 1923, the year affording the most significant records, were April 20 and June 10, a period of fifty days. All the species, excepting *Synergus campanula*, appeared between April 20 and May 15, whereas *campanula* itself emerged from May 1 to June 10. The differences in relative dates and periods of emergence of these species and of *campanula* in 1924 were about the same as in 1923.

In view of the appearance of *campanula* after these other outer gall species it cannot be held that this cynipid is a host of the other species, all of

which are chalcids, a group predominantly parasitic. However, although specialized in certain habits, the cynipids as a group are the more primitive insects of the two families; also considering the subjugation of *D. mamma* and other gall making cynipids by many parasites, favors the cynipid *S. campanula* as the most likely host. But this is probably not the case in the present instance. It is furthermore believed that most or all of the chalcids reared have similarly the function of inquilines. Not only would *campanula* be too small to support its contemporary chalcids of equal or larger size, but the chalcids themselves are for most part so alike in volume of body and time of appearance that parasitism of one or more species by one or more others is a foregone conclusion. That *campanula* is probably not parasitized is also indicated by the dominant numbers in which it has appeared in both years of the observations.

The number and distribution of the broods with regard to the period of development of the galls of *flavipes* and *mamma* can only be inferred now. When the adults of the outer gall inhabitants appear in April, May and June, the galls of *flavipes* are growing. In fact, the period over which the supposed inquilines are known to emerge, and the duration of the growth of the *flavipes* gall are quite synchronous. It is plausible that a brood of these species may therefore arise on the gall of *flavipes*, and the second generation of adults appear after the *mamma* gall has obtained a good beginning. This, hypothetically, may be in latter August, the development of the inquilines possibly continuing after the *flavipes* has left its gall, much as they remain in the outer portion of the *mamma* gall and may even continue to grow there after its maker matured and deserted. Circumstantial evidence then leads to the thought that the occupants of the outer layer of the *mamma* gall may develop two broods annually, one known to arise in the *mamma* construction, and the other possibly coming from the analogous part of the *flavipes* gall approximately in midsummer.

#### INCIDENTAL OCCUPANTS OF THE GALL

In addition to the species that take portions of the gall or some of its inhabitants as food, other forms of arthropod life have been observed there.

Not uncommonly the mature gall is found to be hollowed out below the outer surface. One or more holes may lead from the outside of the tunnels that go to many points in the outer layer. In three instances, coleopterous larvae were removed from these mines, and one of them was reared and found to be *Cymatodera undulata* Say, Cleridae. This predator consumed over sixty hymenopterous larvae in developing from a half-grown condition to maturity. Its object in the gall was therefore to devour the larvae of the inquilines generally present there. The insect became adult on July 23, and lived on a diet of bugs, flies and beetles provided for it until October 1, 1924.

In another instance, an old gall possessed characteristic subsurface tunnels apparently occupied formerly by a burrowing and predaceous larva. The gall maker or one of its parasites had emerged making its shaft from the larval cell to the outside. When first found on May 20, 1924, the subsurface passages were occupied by a small colony of ants which Mr. M. R. Smith, University of Illinois, kindly determined as *Leptothorax fortinotus*, var. *metanoticus* Wheeler. On May 25, 1924, this tramp ant had moved its family to the empty larval cell

of the gall, perhaps because part of the outer layer had been cut away. The colony at this time included a small number of workers, a queen, a few pupae and larvae, and some eggs.

The galls of *Disholcaspis mamma* seemed to remain attached to the tree one or more years after they are evacuated by the normal inhabitants. Such old galls are sometimes adopted by spiders that live in the burrows, especially the large exit holes made by the larval cell inhabiting Hymenoptera when they emerge. These abiding places are lined with silk. Identification of the spiders relevant here could not be much inasmuch as only the silken nests were available.

#### SUMMARY

The galls of *Disholcaspis mamma*, on bur oak, become full grown in the fall, and the adult gall former emerges during that season. The present study revealed that eighteen species of other Hymenoptera have made this gall their abode. These forms are definitely divided into two groups with reference to their distribution in the gall, thus forming two micro-societies. The species that presumably were next after the gall maker to occupy the gall are associated with the gall former as primary parasites of its larva, which occupies the larval cell of the gall. Four species believed to have this relationship have been taken; *Synergus obtusilobae*, Cynipidae; *Epiurus indagator*, Ichneumonidae; *Syntomaspis racemariae*, Callimomidae, and *Tetrastichus* sp., Tetrastichidae.

The other fourteen species have, without doubt in most of the cases, been obtained from the woody outer wall about the larval cell. According to the criterion of the quite simultaneous appearance of the adults and closely similar size of the larvae of these fourteen species, it is believed that they are all inquilines, consuming small portions of the gall tissue. The following order of arrangement is according to the number of adults reared, the most abundant being placed first; *Synergus campanula*, Cynipidae; *Callimome* sp., Callimomidae; Pteromalidae; Eurytomidae, six species provisionally determined; *Eupelmus macrocarpae*, Eupelmidae; *Eupelmus* sp., Eupelmidae; *Synergus oneratus*, Cynipidae, and *Ormyrus ventricosus*, Callimomidae. The family Cynipidae is represented in the gall association by three species beside the gall maker. Three habits namely gall former, parasite and inquiline, are represented by these Cynipidae. All of the remaining species, excepting *Epiurus indagator*, the ichneumonid, are Chalcidoidea. The parasitic and inquiline insects reared appeared as adults chiefly during April, May, and June when the host insect occurs in the *flavipes* gall. It is possible that two broods arise annually, one on the *mamma* gall, in which the inquilines winter as larvae, and the other on the gall of the alternate *flavipes*, although the latter generation and its supposed habit has not been studied firsthand.

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NOTES ON SPECIES OF POLYMERUS WITH DESCRIPTIONS OF  
FOUR NEW SPECIES AND TWO NEW VARIETIES  
(HEMIPTERA, MIRIDAE).\*

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***Polymerus rubroornatus* n. sp.**

Suggestive of *chrysopsis* Kngt., but differs in the black coxae and chiefly black femora; scutellum of female with apical area red, while in *chrysopsis* it is never red although coxae and femora are always red; length of antennal segment I distinctly greater ( $\delta$ ) than or equal ( $\varphi$ ) to width of vertex, while in *chrysopsis* segment I is not equal to width of vertex in either sex.

$\delta$ . Length 6.8 mm., width 2.6 mm. Head: width 1.06 mm., vertex .47 mm.; frons more prominent and base of tylus more deeply sulcate than in *chrysopsis*. Rostrum, length 1.26 mm., reaching somewhat behind front coxae or slightly beyond middle of sternum. Antennae: segment I, length .57 mm.; II, 2.2 mm.; III, .71 mm.; IV, .55 mm. Pronotum: length 1.01 mm., width at base 1.87 mm.

Coloration and pubescence very similar to that of *chrysopsis* but differs in the black legs; femora rarely showing some red on middle.

$\varphi$ . Length 5.7 mm., width 2.7 mm. Head: width 1.14 mm., vertex .58 mm. Antennae: segment I, length .58 mm.; II, 2.04 mm.; III, .83 mm.; IV, .63 mm. Pronotum: length 1.11 mm., width at base 2 mm. Similar to the male in pubescence and coloration, except the scutellum always with median apical area red; femora with red on middle but always with one or two rows of black spots in the red.

*Holotype*:  $\delta$  August 7, 1925, Stonewall, alt. 8,500 ft., near Trinidad, Colorado (H. H. Knight); author's collection.

*Allotype*: same data as type.

*Paratypes*: COLORADO—3  $\delta$  7  $\varphi$ , taken with types. 3  $\delta$  1  $\varphi$ , topotypic, collected by C. J. Drake.  $\varphi$  July 4, La Veta.  $\varphi$  July 27, 1909, Georgetown (W. J. Gerhard). 2  $\delta$  4  $\varphi$  August 20, 1925, Pingree Park, alt. 8,800 ft. (F. C. Hottes and H. H. Knight).  $\varphi$  August 15-20, 1924, Pingree Park (Drake & Hottes).  $\varphi$  August 20, 1925, Pingree Park (C. J. Drake). NEW MEXICO— $\varphi$ , "N. M." UTAH— $\delta$   $\varphi$  June 27, 1891, Wasatch (E. A. Schwarz); recorded as *americanus* Reut. by Uhler (1893).

This species was found to occur among mixed herbaceous growth on clay soil in open glades, but not in sufficient numbers to definitely locate the food plant, although it appeared to be associated with a species of *Chrysopsis*.

\*—Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.



**Polymerus relativus n. sp.**

Very similar to *diffusus* Uhler, but differs in the larger size and shorter rostrum which does not attain posterior margin of sternum.

♀. Length 5.4 mm., width 2.7 mm. Head: width 1.23 mm., vertex .68 mm.; height of an eye .51 mm., equal to length of antennal segment I. Rostrum, length 1.28 mm., extending about half way between hind margins of front coxae and posterior margin of sternum. Antennae: segment I, length .51 mm.; II, 2.03 mm.; III, .80 mm.; IV, .57 mm. Pronotum: length 1.06 mm., width at base 2 mm.

Coloration and pubescence very similar to *diffusus* Uhler, although usually more broadly pale; lora and gula pale while in *diffusus* the same parts are chiefly black. Legs pale, tarsi and tips of tibiae blackish; femora with one or two rows of black dots on both anterior and posterior aspects, nearly obsolete on anterior aspect of front pair. Pronotum with margins more broadly pale while the cuneus is pale on outer half only.

♂. Length 6.9 mm., width 2.6 mm. Head: width 1.18 mm., vertex .54 mm.; height of an eye .51 mm., not equal to length of antennal segment I. Rostrum, length 1.28 mm., extending slightly beyond hind margins of front coxae. Antennae: segment I, length .61 mm.; II, 2.81 mm.; III, missing. Pronotum: length 1.13 mm., width at base 2 mm.

More elongate than the female and darker in color; very similar to the male of *diffusus*, but size larger and distinguished by the shorter rostrum. Scutellum black; cuneus blackish, more or less pale at base and apex. Legs darker than in female; tibiae black, with pale on dorsal aspect; femora black at base and extending along ventral aspect, the paler areas with lines of black dots as in the female.

*Holotype*: ♀ August 15, 1925, Dolores, Colorado (H. H. Knight); author's collection.

*Allotype*: ♂ July 21, 1900, Salida, Colorado (E. D. Ball).

*Paratypes*: COLORADO—♀, taken with type. 2 ♀, taken with allotype. ♀ July 15, ♀ August 9, 1908, Ft. Garland, Ute Creek Ranch (R. W. Dawson). NEW MEXICO—♂. "N.M."

The type with another female were swept from rabbit bush (*Chrysothamnus* sp.) which seems to indicate the general habitat of this species.

**Polymerus diffusus Uhler.**

1872 *Poeciloscytus diffusus* Uhler, Hayden's Surv. Terr., Rept. for 1871, p. 415.

For comparison with the foregoing species I give herewith some of the critical characters of *diffusus* Uhler.

♀. Length 4.1 mm., width 2 mm. Head: width 1.03 mm., vertex .54 mm.; height of an eye .46 mm. Rostrum, length 1.2 mm., extending slightly beyond posterior margin of sternum. Antennae: segment I, length .48 mm.; II, 2.3 mm.; III, .66 mm.; IV, .54 mm. Pronotum: length .93 mm., width at base 1.7 mm.

*Plesiotypes*: ♀, Ogden, Utah (Riley Coll.); one of the cotypes. ♂, June 24, 1920, Ft. Collins, Colorado (Geo. M. List).

Records: COLORADO—2 ♂ 2 ♀ July 12, 1903, Denver (E. P. Van Duzee). UTAH—♀ June 27, 1891, Wasatch (E. A. Schwarz).

**Polymerus flavocostatus n. sp.**

Allied to *venaticus* Uhler, and runs in the same couplet in my key to the

species of *Polymerus* (Hemip. Conn., 1923, p. 598), but is separated at once by the pale embolium and black inner half of cuneus; coloration of hemelytra suggestive of *severini* Knegt., but distinguished from that species by the black tibiae and black apical one-third of femora.

♀. Length 5 mm., width 2.3 mm. Head: width 1.06 mm., vertex .54 mm. Rostrum, length 1.11 mm., extending slightly beyond anterior coxae, or to middle of sternum, first and second segments chiefly yellowish. Antennae: segment I, length .51 mm.; II, 1.8 mm.; III, .86 mm.; IV, missing; black, segment III yellowish. Pronotum: length 1.02 mm., width at base 1.7 mm. Coloration and pubescence very similar to *venaticus* but hemelytra differs as described above.

♂. Length 5.7 mm., width 2.3 mm. Head: width 1.06 mm., vertex .46 mm. Antennae: segment I, length .53 mm.; II, 1.86 mm.; III, broken. Hemelytra colored as in the female; coxae orange yellow, or dusky only at base, thus similar to the female.

*Holotype*: ♀ June 17, 1915, Iowa City, Iowa (L. Stoner); author's collection.

*Allotype*: ♂ July 2, 1897, Little Rock, Iowa (H. Osborn); Iowa State College collection.

*Paratypes*: ♂, taken with the allotype. ♀ June 20, 1911, Lincoln, Nebraska (J. T. Zimmer).

### ***Polymerus proximus* Knight.**

Hemiptera Conn., 1923, p. 601.

This species was originally described from three specimens, one each from Missouri, Minnesota, and Pennsylvania. I have recently taken a large series, May 18 to June 2, 1925, at Ames, Iowa, on its food plant, *Galium aparine* L. I have also seen a pair from Roca, Nebraska, May 30, 1911 (Pool), and a specimen from Douglas County, Kansas (E. S. Tucker).

### ***Polymerus nigrigulis* n. sp.**

Allied to *basalis* Reuter, but distinguished by the unique color combination. General coloration yellowish to reddish and marked with black; head black, juga, median line of front and spot each side of vertex pale; rostrum black, two basal segments yellowish; antennae black, segment II more brownish black. Pronotum pale to brownish, calli and between, also extending to anterior angles and confluent with line across top of coxal cleft, and a submarginal lateral line on pronotal disk, black; scutellum black but yellowish each side on apical half. Hemelytra yellowish, corium and clavus tinged with reddish, a small fuscous spot apparent along radial vein at middle; cuneus roseate, outer margin pale; membrane pale, somewhat brownish within areoles, a fuscous dot behind apex of larger areole. Sternum and coxae black, front coxae pale anteriorly; femora with two subapical bands and ventral surface of hind tibiae on basal half, black. Venter black, but having a rather broad reddish yellow lateral line.

♂. Length 4.5 mm., width 2.2 mm. Head: width 1.11 mm., vertex .48 mm. Rostrum, length 2.3 mm., exceeding slightly the posterior margins of hind coxae. Antennae: segment I, length .43 mm.; II, 1.9 mm.; III, missing. Pronotum: length 1.11 mm., width at base 1.96 mm. Body clothed with silvery to golden sericeous pubescence; legs with black pubescence.

*Holotype*: ♂ July 28, 1923, Gallatin County, Montana; author's collection.

**Polymerus sericeus (Uhler)**

1877 *Poeciloscytus sericeus* Uhler, Bull. U. S. Geol. Geog. Surv., III, p. 422.

Distinguished from typical *basalis* Reut. from Texas by the shorter rostrum and longer antennal segment II, the latter being equal to length of rostrum plus width of vertex; legs orange yellow, femora with two darker subapical bands but without distinct band on middle. Cuneus, corium exterior to radial vein on apical half, and embolium apically, distinctly red; a longitudinal stripe of fuscous on apical half of corium bordering the red.

♂. Length 4.6 mm. Head: width 1.11 mm., vertex .39 mm. Rostrum, length 1.86 mm., just attaining posterior margins of intermediate coxae. Antennae: segment I, length .50 mm., black; II, 2.2 mm., orange brown, darker on apical one-fourth; III, .91 mm. Pronotum: length .97 mm., width at base 1.69 mm.

Records: FLORIDA—♂ Sept. 25, 1914, Dunedin (W. S. Blatchley). NEW MEXICO—♂ July 12, 1917, Deming (H. H. Knight) ♂ "N.M." TEXAS—♂ ♀ Aug. 28, 1905, Dallas (F. C. Pratt). 2 ♀. "Tex." U.S.N.M.

For some time I have noticed that certain specimens, which in most respects seem to be *basalis* Reut., have a shorter rostrum and distinctly longer antennae. In view of the fact that the length of rostrum is an important specific character for many species of *Polymerus* I am not yet convinced that these specimens are identical with *basalis* Reut. In looking up the original description of *sericeus* Uhler, I note the following significant statements: "rostrum extending to the base of the posterior coxae... Antennae dusky yellow or pale piceous; the basal joint...; the second very long, palest, piceous at base and tip;"

The form generally accepted as *basalis* Reuter, a species that breeds on dog fennel (*Anthemis*), has a distinctly longer rostrum which extends beyond posterior margins of hind coxae. It is recognized that the position of the head will make some difference in the apparent length of the rostrum, but this difficulty is corrected when micrometer measurements are made and compared with length of antennal segments and width of head. Until this difference in length of rostrum and antennae has been proved to be variable in the species concerned, it seems best to recognize *sericeus* Uhler as the species with shorter rostrum.

**Polymerus basalis fuscatus n. var.**

Apparently a very dark form of *basalis*, having the pronotum and hemelytra largely blackish; femora blackish, forming three pale bands on apical half, although usually incomplete on posterior aspect.

♀. Length 5.7 mm. width 2.5 mm. Head: width 1.14 mm., vertex .48 mm. Rostrum, length 2.3 mm., just attaining posterior margins of hind coxae. Antennae: segment I, length .46 mm.; II, 1.89 mm., pale, black at base and on apical one-fourth; III, .98 mm.; IV, .63 mm.

Type: ♀ April 12, Miami, Florida (D. M. DeLong); author's collection. FLORIDA—♀ April 26, 1912, Fort Myers (W. T. Davis). INDIANA—♂ Oct. 6, 1918, Marion County (W. S. Blatchley). MINNESOTA—♂ Sept. 13, 1923, Le Sueur (Wm. E. Hoffmann). NEW YORK—♂ ♀ July 4, 1916, Four Mile (H. H. Knight). 2 ♂ Aug. 4, 1923, Enfield Glen near Ithaca (J. L. Buys).

**Polymerus basalis rufipes n. var.**

Distinguished from *basalis* Reuter by the bright red tibiae; femora with two subapical red bands; dorsum pale yellowish, embolium pale, cuneus roseate

red although outer margin pale; membrane fuscous, veins pale, larger areole with a small opaque white spot within basal area, and bordered apically by an opaque white line of about the same thickness as the vein.

♀. Length 5 mm., width 2.3 mm. Head: width 1.13 mm., vertex .54 mm. Rostrum, length 2.43 mm., attaining posterior margins of hind coxae. Antennae: segment I, length .40 mm., black, reddish on dorsal aspect; II, 1.66 mm., reddish, black at base and dark reddish brown apically; III, .74 mm.; IV, missing. Pronotum: length 1.14 mm., width at base 1.9 mm.

♂. Length 4.3 mm., width 2 mm. Head: width 1 mm., vertex .43 mm. Antennae: segment I, length .37 mm.; II, 1.57 mm., distinctly thickened, equal to thickness (.114 mm.) of segment I; III, .63 mm.; IV, mutilated.

Coloration very similar to the female, but tylus, each side of front and joining with glabrous spots on vertex, and more or less on calli, black.

*Holotype*: ♀ Aug. 4, 1900, Fort Collins, Colorado (E. D. Ball); author's collection.

*Allotype*: same data as type.

*Paratypes*: 4 ♂ ♀ "Colo."; U.S.N.M. and Cornell University collections. ♀ July 20, 1920, Yellowstone National Park (A.A. Nichol).

At present I am placing this form as a variety of *basalis* Reut., although the opaque white marks in the membrane, somewhat more prominent head, and thickened tibiae of red color, indicate that it may prove to be a distinct species.

### **Polymerus flavocuneatus (Reuter).**

1907 *Pocloscytus flavocuneatus* Reuter, Ofv. Finska Vet.-Soc. Forh., xliv, No. 5, p. 8.

This species was described from Jamaica. I have a specimen from Havana, Cuba (Baker), determined and received from Dr. Bergroth. Recently I have received specimens from Dr. E. D. Ball, which he collected Aug. 25-30, 1925, at Sanford, Florida. Also a specimen is at hand collected at Biscayne Bay, Florida, by Mrs. A. T. Slosson. This species is closely allied to *cuneatus* (Dist.), and in the original description Reuter suggested the possibility of it proving to be only a variety of that species. Until more material of typical *cuneatus* is available I am not prepared to advance an opinion on the subject. It is possible this is the same form which other workers have recorded from Florida as *cuneatus* (Dist.).

### **NOTES ON THE PROVANCHER COLLECTION OF DAMSEL-FLIES (ODONATA).\***

BY J. MCDUNNOUGH,

Ottawa, Ont.

In the "Naturaliste Canadien," 1876, VIII, pp. 322-27, and also in the "Petite Faune Entomologique," II, 91-96, Provancher has listed and described a number of damsel-flies from the Province of Quebec belonging to the subfamily Coenagrioninae, placing them under the general generic heading "*Agrion*." This list was copied by Fyles in his "Dragon-flies of the Province of Quebec," (1900, 31st Rep. Ent. Soc. Ont., 52-55) without comment and the names have gradually crept into the literature. With a view to checking up the determinations made by

\*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.



Provancher I have recently, through the courtesy of Canon Huard, been enabled to examine the entire Provancher collection in this group, and offer the following notes on the species, as listed. At the outset it might be stated that there are two Provancher collections, the one with the name labels written on pink slips of paper, attached to the specimens, the other with name-labels on white paper with red border-line; in both collections the specimens bear a printed number as well.

*Agrion irene* Hag. 1 ♂ (No. 46). The identification is correct.

*Agrion hageni* Walsh (Add. & Corr. p. 92<sup>2</sup>). The specimen bearing the name-label (No. 47) is a ♀ of *Ischnura verticalis* Say. A ♂, associated in the collection with this ♀ but without other label than "♂" appears correct, although the tip of the abdomen is broken off. Another ♂ (No. 43) with white name-label is also *verticalis*.

*Agrion ramburii* Selys. The name is attached to a ♂ (No. 48); the abdomen is broken but the species is evidently *verticalis*. Provancher, in both his key and description, mentions the blue 8th and 9th segments with black spot on each side, characteristic of *verticalis*. A ♀ with white name-label marked "♂, No. 44" is also *verticalis*. *Ramburii* should be dropped from our lists, as far as Provancher's determination is concerned.

*Agrion iners* Hag. There are no specimens in the collection corresponding to Provancher's description which is evidently merely a French translation of Hagen's original text. A specimen with pink name-label (No. 49) is a ♂, *verticalis* Say and is followed by another ♂ of the same species; a further specimen with white label (♀, No. 45) is the ♀ form of *verticalis* with orange basal segments.

*Agrion positum* Hag. The only specimen under this name in the collection with entire abdomen is a ♂ (No. 50) with blue 8th and 9th abdominal segments: the subdorsal thoracic stripe is broken to form an exclamation mark. The specimen is evidently a somewhat aberrant *verticalis*. *Positum*, however, should not be dropped from the Quebec List as it is taken rarely in the vicinity of Hull.

*Agrion sancium* Burm. The determination is correct.

*Agrion canadense* Prov. This species was later referred (p. 922) as a variety of *civile* Hag. The only specimen in the collection, however, bearing the name *canadense* is a ♀ (No. 52) with broken abdomen; this, judging by the mesostigmal plates, is very evidently *hageni* Walsh. Under the name *civile* Hag. is a teneral ♂ of *hageni* which may possibly have served for the description of the ♂ of *canadense* as it agrees with the description, even to having the posterior portion of the abdomen broken off, as stated. *Canadense* Prov. should be removed from the synonymy of *civile*, as given by Muttkowski, and placed as a synonym of *hageni* Walsh.

*Agrion civile* Hag. The only other specimen under this name (♀, No. 48) besides the aforementioned one, belongs to *Nehalennia irene* Hag. The name *civile* should be dropped from our lists.

*Agrion durum* Hag. The ♂ (No. 49) under this name is *hageni* Walsh: the ♀ (No. 54), however, is *cyathigerum* Charp. *Durum* must be dropped from our Canadian lists.

## DESCRIPTIONS OF NEW CANADIAN DIPTERA.\*

BY C. HOWARD CURRAN

Ottawa, Ont.

The identification of Diptera collected by Mr. N. K. Bigelow of the Royal Ontario Museum of Zoology, Toronto, necessitates the description of several new forms of Syrphidae and Tachinidae occurring in Canada in order to complete the determinations. Descriptions of some species collected by others are also included. The types of the new species are in the Canadian National Collection, Ottawa, while the disposition of paratypes is indicated following the descriptions.

## RHAGIONIDAE

**Chrysopila cameroni** n. sp.

Related to *tomentosa* Bigot but the wings are conspicuously infuscated, especially on apical half. From *humilis* Lw., which it also closely resembles, it differs by the brownish rather than greyish wings and black haired palpi. Length, 5.5 to 7 mm.

*Male.* Black except the tibiae and bases of halteres. Head thickly greyish pollinose except the ocellar swelling and occiput above, which are more brownish, the space between the eyes appearing dark from dorsal view. Pile pale golden yellow, the palpi with coarse black hair. Antennae deep black.

Mesonotum, except the sides, opaque brownish black, fairly thinly golden tomentose, the erect hairs also golden; sides of mesonotum and pleura grey pollinose. Pile of pleura golden yellow; mesopleura mostly bare. Scutellum opaque blackish, the golden tomentose pile dense except on disc.

Coxae grey pollinose; femora thickly golden tomentose; the long, fine hairs beneath the posterior femora brownish; tibiae with blackish apices, the obscure hairs black; first tarsal segment obscure reddish except on apical fourth.

Wings strongly brownish on apical half, less so basally; stigma blackish brown. Halteres blackish with reddish base.

The golden tomentum is so dense as to conceal the dorsum of the abdomen, the venter being greyish basally but mostly concealed apically. The erect hairs are also golden. Genitalia opaque black.

*Female.* Front deep cinnamon brown except below and laterally where it is more greyish, the pile coarse, short, black; also some black hairs on upper part of face. There is a pair of obscure grey vittae behind the suture which are connected along the suture with the grey lateral margins. The abdomen is greyish pollinose, the color only partly hidden by the golden tomentum which is sparse on apex and venter.

*Holotype*—♂, 3 Mile Creek, Saskatoon, Sask., larva collected May 29, 1923, pupated, June 5, emerged June 15, 1923, (A. E. Cameron), No. 2025 in the Canadian National Collection.

*Allotype*—♀, 9 Mile Creek, Saskatoon, Sask.; larva collected June 5, 1923, pupated June 6, adult emerged June 12, 1923, (A. E. Cameron).

\*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept of Agric., Ottawa.

## DOLICHOPODIDAE.

**Rhaphium gibsoni n. sp.**

Traces out to *R. (Xiphandrium) flavicoxa* Van Duzee in my key but differs by having the third antennal segment decidedly narrower than the width of the front, yellow posterior tibiae with the apical fifth black (less beneath), bearing at most a single black bristle on middle coxae beyond the middle, etc. Length, 2 mm.

*Male.* Face silvery white, fairly wide, narrowing below; palpi grey pollinose; front shining blue with violaceous reflections; occiput thinly greyish pollinose, white along the orbits on lower third. Occipital cilia black, limited to upper third of eyes; hair of occiput white. Proboscis reddish brown. Antennae elongate, the third segment about as long as head-height, its width at most a little more than half the frontal width at ocelli, tapering to blunt points, the arista only as long as basal width of third segment, not conspicuously pubescent.

Thorax dark bronze-green, almost black or blue-black, the pleura thickly whitish pollinose, their posterior edge broadly yellow; scutellum violaceous on disc, bearing a single pair of bristles. Mesonotum thinly brownish pollinose.

Legs yellow; apical fifth of posterior tibiae and the whole of their tarsi, black; anterior tarsi brownish from middle of second segment, the middle ones from apex of first segment. Coxae with pallidly yellowish hairs; middle pair with a yellowish thorn and an inconspicuous black bristle on outer anterior edge beyond middle; posterior coxae with a single black bristle on outer side. Hair of legs short, black, the anterior four femora with the hairs mostly yellow on lower half but not conspicuous, the hind femora with a row of mostly yellow hairs along each lower edge. First segment of front tarsi higher than wide, very slightly broadened apically, the hair a little longer above and behind.

Wings cinereous hyaline. Large crossvein situated almost twice its own length from wing margin, gently bowed outwards. Apical third of ultimate section of fourth vein parallel with third. Squamae white ciliate. Halteres yellow.

Abdomen dark green or bronze-green, the hairs and bristles black; sides of first two segments and the first two sternites with pale hairs. Genitalia more blackish; outer lamellae reddish on basal half, the apical half forming a small black triangle the apical side of which bears fine bristly yellowish hairs which are as long as width of triangle.

*Female.* Face broad, argenteous white, the palpi more greyish white with short black hairs. Third antennal segment about one fifth longer than wide, triangular; arista as long as face and palpi, distinctly pubescent. Two black bristles on outer edge of middle coxae and sometimes one or two tiny apical ones. Wings with the large crossvein distinctly bordered with pale brownish, the wings darkened in front.

*Holotype*—♂, Smith's Cove, Nova Scotia, Aug. 6, 1925, (A. Gibson); No. 1960 in the Canadian National Collection, Ottawa.

*Allotype*—♀, same data.

*Paratype*—2♂, 2♀, same data.

In my key the ♀ traces to *dubium* V.D. but is readily distinguished by

the absence of bristly black hairs at apex of front coxae, although there may be one or two very fine black hairs.

## SYRPHIDAE

**Syrphus canadensis** n. sp.

Belongs to the *wiedemanni-nitens* group. Related to *nitens* from which it differs in the much narrower abdominal fasciae, longer third antennal segment, wholly broadly deep black oral margin, much stronger facial stripe and the presence of an entire, broad black fascia on the second abdominal sternite. From *S. pomus* Curran it is at once distinguished by the strongly undulate abdominal fasciae. None of the pale fasciae reach the lateral margins and that on the second segment is always interrupted.

Length, 7-9 mm. *Female*. Face yellow, very thinly white pollinose, the cheeks black to above oral tip, the broad black facial vitta tapering above, reaching the upper fourth of the face or practically to the antennae; the yellow color extends broadly onto the front to the lower edge of the transverse depression and there is always a reddish spot above the middle of the lunula which may be obscurely connected with the lateral pale color. In profile the face is almost perpendicular with a nose-shaped tubercle which is not very prominent, the oral margin itself less prominent than upper part of face. Pile of face, cheeks and occiput whitish, becoming pale brassy yellow above. Front and upper angles of face black pilose. Front shining black, the white pollen of the sides below expanding into large, broadly separated, more greyish, longitudinal triangles on the middle of the front; sides of front almost parallel on upper third; supra-antennal spots brownish. Antennae brown, the first two segments narrowly reddish below, the third reddish on basal half of lower third or more; arista brownish.

Thorax aeneous, white pilose; a lateral triangle behind the notopleura rather reddish; scutellum translucent reddish yellow, the sides and narrow base black; more or less metallic; pile wholly fine, whitish.

Anterior four femora black on basal third to half, the posterior pair black on basal three-fourths to five-sixths; tibiae reddish, the posterior pair usually rusty brownish except the broad ends; tarsi reddish brown above except the first segment, wholly reddish below. Pile pale, the middle femora behind, posterior femora below and the posterior tibiae, with black hairs; apical four segments of hind tarsi with black hairs above.

Wings cinereous hyaline; stigma pale luteous; plumula and squamae white, the latter with the margin and fringe tinged with yellow. Halteres yellow.

Abdomen shining black, the yellow bands broadly bordered with a somewhat deeper black. Yellow on the second segment in the form of two broadly separated transverse spots which are two and a half to three times as long as wide, usually narrowed inwardly and sub-truncate outwardly, sometimes broadly rounded at either end, lying across the middle of the segment. On the third segment the band is from one quarter to two fifths the length of the segment in width, towards the sides, narrowed towards the middle, concave towards the sides in front and usually at the middle, so as to form a strikingly undulated band, which is separated from the base of the segment by its own width in the middle and more broadly so laterally, the outer ends of the fascia obliquely truncate.



Fourth segment similarly marked, the pale fascia usually a little narrower. Apices of fourth and following segment reddish, the fifth with a reddish basal spot in each anterior corner, convex behind and not reaching the lateral margins. Second and following sternites with a very broad, shining black fascia, widened in front at the sides, well separated from the posterior margin. Pile pale in front of first yellow spots (long laterally), and on the remaining yellow fasciae except in the middle, elsewhere short, stouter, black.

*Holotype*—♀, Aweme, Man., Aug. 4, 1920, (H. A. Robertson); No. 1881 in the Canadian National Collection, Ottawa.

*Paratypes*—♀, Aweme, May 9, 1915, (N. Criddle); 2♀, Low Bush, Lake Abitibi, Ont., June 9, 1925, and ♀, July 21, 1925, (N. K. Bigelow).

I have had this species for several years, considering it to be probably a variety of *S. nitens* Zett. Examples of the latter from Denmark and India prove it to be quite different. *S. nitens* does not, so far as I am able to determine, occur in North America, the species so-called being referable, at least in part, to *S. meadi* Jones.

#### ***Chilosia nigroapicata* n. sp.**

Related to *lasiophthalma* Will. and *ferruginea* Lovett but readily distinguished from both by the black pilose fourth abdominal segment, only a small lateral basal patch of pile being pale. Length, 10.5 to 11 mm.

*Male*. Black, thorax aeneous, pile long and yellow. Face almost perpendicular, slightly retreating, the tubercle small and not prominent, the face produced considerably downwards, thinly brownish pubescent, more thickly whitish pollinose above, the lateral margins shining. Frontal triangle gently convex with narrow, deep median sulca, moderately large. Vertical triangle scarcely longer than wide. Head very pale yellowish pilose. Antennae reddish yellow, the first two segments more or less ferruginous, the third slightly longer than wide, shorter below, the apex slightly receding below, the corners rounded; arista brown, tapering, about as long as width of front.

Mesonotum and scutellum rather aeneous with long cinereous yellow pile and occasional black hairs.

Legs black, the tips of the femora, basal third of anterior four and one fourth of posterior tibiae, apical fifth of all the tibiae and tips of the first two or three segments of anterior four tarsi reddish. Pile of legs pale, largely black on front femora, on apex of middle pair behind, beneath the posterior femora and on dorsal surface of all the tarsi.

Wings lightly infuscated on apical half, but becoming pale posteriorly; somewhat yellowish on basal half. Apical cell obtuse apically. Squamae whitish, with yellowish border and whitish fringe. Halteres reddish yellow.

Abdomen with sub-opaque area on second segment basally, the first three segments long, pale pilose, the fourth segment, except small lateral patch basally, and its narrow apex, with coarser black pile; genitalia mostly pale pilose, only black haired above.

*Female*. Front above almost two thirds as wide as eye, the lateral depressions very broad and densely punctured, the slightly raised median portion with a very shallow, broad median longitudinal depression which is well marked

below the weak transverse depression. Frontal pile long, very pale straw yellow. Wings quite dark on apical half, especially in front.

*Holotype*—♂, Low Bush, Lake Abitibi, Ont., June 6, 1925, (N. K. Bigelow); No. 1799 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Low Bush, June 12, 1925, (Bigelow).

*Paratypes*—♂, Harcourt, N. B., June 5, 1917, (M. B. Dunn), ♂, Low Bush, June 4; ♀, Low Bush, June 16, 1925 (Bigelow). Paratypes in Royal Ontario Museum, Toronto.

***Ohilosia nigrofasciata* n. sp.**

Allied to *C. orilliaensis* Curran from which it is readily distinguished by the yellowish pilose pleura and absence of black pile on abdomen. From *nigrovittata* Lovett it differs in having pale pleural pile, yellow pile on the middle femora and more concave face. In Shannon's key (Ins. Ins. Mens., X, 127) traces to *florella* Shannon but there is black pile on the thorax, the facial tubercle is quite as prominent as the antennal base, wings darkened, not luteous, etc. Length, 8.5 to 9.5 mm.

*Male*. Mainly black. Face moderately concave above, the tubercle large and prominent, the oral margin almost as prominent as the antennal base, thinly greyish pollinose, thickly so above and on the lateral margins; not pilose on the slopes. Frontal triangle rather small, two-thirds as long as wide, with conspicuous, wide median sulca, black pilose. Vertical triangle small, elongate, black haired. Pile of occiput, cheeks and face, pale yellowish or cinereous. Pile of eyes black or brown above, pale yellowish below. Antennae reddish, the second segment usually reddish brown, the first brown; third small, slightly longer than wide, the apex convex and a little oblique. Arista blackish with paler base, microscopically pubescent, a little longer than frontal width. Occipital cilia black.

Thorax shining black, yellowish or cinereous pilose, the mesonotum usually very broadly black pilose between the wings and on the notopleura, the black often more extensive but elsewhere largely mixed with pale. A grey pollinose spot inside the humeri. Scutellum often chiefly black pilose, the pale usually predominating, the fine, hair-like bristles black. Mesopleura with some black hairs above.

Legs black: anterior four tibiae reddish with the median third or fourth brown; apices of femora, basal fourth and apical fifth of hind tibiae and the first segment of the anterior four tarsi, reddish, the second and third segments of the middle tarsi usually more or less distinctly reddish, at least at the base and apex. Pile of anterior femora black behind, of the middle pair, yellowish except on apical fourth behind the posterior pair with pale pile on basal half or more; front tibiae yellowish pilose behind, the legs elsewhere black haired.

Wings light brownish, becoming paler posteriorly, or only infuscated anteriorly. Ultimate section of third vein much shorter than last costal section, apical cell fairly obtuse apically. Squamae white with brownish or yellow margin and golden or yellow fringe. Halteres yellowish, the knob always, the stem usually, somewhat infuscated.

Abdomen shining black, the second and third segments sub-opaque except the broad lateral margins. Pile pale yellowish, brownish and shorter on disk of second and third segments. Venter and genitalia pale pilose.

*Female.* Front moderate in width, the lateral grooves shallow; no median sulca; lower transverse depression shallow; pile pale yellow, broadly black across the ocellar region, fairly short, abundant, erect. Ocellar triangle slightly longer than wide; ocellar tubercle extending to vertex, weak behind. Pile of thorax appressed, shorter, often almost wholly yellow, in which case there is a blackish spot on each side of the middle between the wings, these spots however, usually fused; notopleura always pale pilose; usually one or two black hairs on mesopleura; two to four pairs of marginal scutellar bristles, the scutellum with rather tawny pile. Pile of abdomen appressed, rather short, reddish yellow on the shining second and third segments. Trochanters partly reddish; usually three or four segments of anterior four tarsi and the apex of first and whole of two following segments of hind tarsi, reddish. Pile of legs chiefly pale.

*Holotype*—♂, Low Bush, Lake Abitibi, Ont., June 11, 1925, (N. K. Bigelow); No. 1797 in the Canadian National Collection, Ottawa.

*Allotype*—♀, same data.

Additional specimens from: Low Bush (Bigelow) taken on the following dates—4♂, 28♀, June 6, 13♂, 77♀, June 7; 18♂, 23♀, June 8; 1♂, 25♀, June 9; 3♂, 3♀, June 10, 22♂, 28♀, June 11; 3♂, 9♀, June 13; ♀, June 16, ♀, June 17; ♀, June 4. Paratypes in Royal Ontario Museum.

In the Canadian National Collection are 4♂, 1♀, collected at Banff, Alta., in May and June, 1922, which evidently belong here but they differ slightly. The face seems to be slightly shorter, not so noticeably produced downwards and not quite as prominent below and the short stiff hairs beneath the hind femora are more numerous and conspicuous. In one ♂ the black pile is much more extensive on the pleura the third antennal segment brownish red. One of the males agrees perfectly with the Ontario specimens while the others grade into the specimen with dark antennae.

(To be continued)

#### A NEW SPECIES OF MUSCID FROM ALBERTA (DIPTERA).\*

BY H. L. SEAMANS,

Lethbridge, Alta.

The Genus *Sphenomyia* in the subfamily Phaoniinae was erected by Dr. Aldrich in 1919 for the reception of a single species from Alaska which he named *S. kincaidi*. In working over some material from Banff several female specimens of *Sphenomyia* were found but no males which could be associated with them. Realizing that the description of a species in this family from female specimens only is not always a safe procedure, I have hesitated before presenting the description of the species, but the characters separating it from its sole congener are such that there can be no doubt as to its distinctness. Inasmuch as the genus was originally based on female specimens, the description of a species based on this sex is quite justifiable.

#### *Sphenomyia banffi* n. sp.

This species is referred to the genus *Sphenomyia* in spite of a few discrepancies when compared with the original generic description. It possesses the long, wedge-shaped frontal triangle which is highly polished and shining

black and reaches to the lunule. It also agrees in most of the other characters of the genus but has only very weak bristles at the base of the third wing vein above, those on the under side being much more prominent, and the arista is very short pubescent.

Length, 4 to 5 mm. *Female*. Shining black except for the halteres which are yellow or brown, and the calypteres which are white with yellow margins. The parafacials are as broad in profile as the width of the third antennal segment, silvery pollinose to the base of the antennae, changing suddenly to a very dark brown. The two upper fronto-orbital bristles are divergent, the rest convergent, the ocellars and verticals are very strong. Eyes sparsely pubescent, the very short hairs being practically invisible under 20 diameters. Thorax and abdomen shining black, the latter weakly bristled, the apex with a few very small, short, curved spines ventrally. Wings clear, veins brown, costal spine lacking. Legs black, fore tibia with two spines at the apex, one on the dorsal and one on the posterior surface; mid tibia with two short median postero-dorsal bristles; hind tibia with two short median antero-ventral, two short median antero-dorsal and one very weak postero-dorsal bristle, and a short compact fascicular comb on the postero-ventral apex. The fore femora have a row of long bristles on each of the postero-ventral and postero-dorsal surfaces reaching from base to apex, and a row of shorter bristles on the basal half of the posterior surface; the mid femur has a row of short bristles on the basal half of the anterior surface and two rather stout bristles near the apex on the posterior surface; the hind femur has a row of bristles on the antero-dorsal surface from base to apex and a row on the apical third of the antero-ventral surface; a row of weak bristly hairs is also present on the basal third of the posterior surface.

*Holotype*—♀, Banff, Alberta, June 21, 1922, (C. B. D. Garrett); No. 2199 in the Canadian National Collection.

*Paratypes*—6 ♀'s, Banff, Alberta, June 21 to August 23, 1922, (C. B. D. Garrett).

## A PRELIMINARY REVISION OF THE CAMPOPLEGIINAE IN THE CANADIAN NATIONAL COLLECTION, OTTAWA.

BY HENRY L. VIERECK,

Ottawa, Ont.

(Continued from page 149)

### Campoplex (Campoplex Gravenhorst).

(*Limnerium*) *Campoplex* (*Campoplex*) *nigricinctus* Ashmead.

(*Amorphota*) *Campoplex* (*Campoplex*) *relativus* Viereck.

(*Limnerium*) *Campoplex* (*Campoplex*) *fura* Cresson.

(*Amorphota*) *Campoplex* (*Campoplex*) *paenexareolatus* Viereck.

This species is represented by a unique male that may be an *Ischnoscopus*, *Hyposoter* or *Ameloctonus*.

(*Limnerium*) *Campoplex* (*Campoplex*) *vigilis* Viereck.

(*Amorphota*) *Campoplex* (*Campoplex*) *ferruginosus* Viereck.

(*Angitia*) *Campoplex* (*Campoplex*) *ruficoxalis* new species = *Campoplex*

(*Angitia*) *ruficoxa* Viereck not Provancher.



(*Omorgus*) *Campoplex* (*Campoplex*) *phthorimacae* Cushman.

(*Amorphota*) *Campoplex* (*Campoplex*) *augustus* Viereck.

(*Limnerium*) *Campoplex* (*Campoplex*) *nolae* Ashmead.

***Campoplex* (*Nemeritis*) *uniformis* new species.**

Related to (*N.*) *cupressi* Ashmead.

*Male*. Length, 4 mm.; black, antennae black, scape and pedicel brownish stramineous in part in front, mandibles and palpi mostly yellowish, tegulae yellow with a clear margin, fore and mid coxae yellowish, brownish at base, fore proximal trochanters stramineous, yellowish apically, their distal trochanters yellowish, mid proximal trochanters blackish with an apical yellowish margin, their distal trochanters yellowish, rest of fore legs stramineous, with the last two joints of their tarsi blackish, extensor surface of fore tibiae yellowish, mid femora reddish stramineous, their tibiae stramineous with their extensor surface brownish near the base and at apex, yellowish at base and in the middle, mid tarsi mostly dark brownish to blackish, hind coxae black, their proximal trochanters black with an apical yellowish margin, their distal trochanters yellowish, their femora reddish, blackish at base and apex, rest of hind legs black, abdomen black, apical margin of second and third tergites brownish, plica yellowish: areola and petiolarea confluent, transversely lineolate, the areola broadly truncate at base.

*Holotype*—♂, Banff, Alta., May 30, 1922, (C. B. D. Garrett); No. 1601 in the Canadian National Collection, Ottawa.

***Campoplex* (*Nemeritis*) *erythromerus* new species.**

Related to *C. (N.) uniformis* Viereck.

*Female*. Length, 5 mm.; compared with the original description of *C. (N.) uniformis* Vier. this differs as follows.—Mandibles mostly dark stramineous, fore coxae dark stramineous, blackish at base, pale at apex, mid coxae blackish, pale at apex, rest of fore and mid legs stramineous, fore apical tarsal joint blackish, mid tarsal joints brownish with their basal joint mostly pale, fore and mid tibiae with their extensor surface yellowish, hind femora not blackish, at most darkened at base and apex, hind tibiae yellowish at base and in the middle, brownish, almost black, near the base and at apex, hind tarsi brownish, with the basal third of their basitarsi yellowish, abdomen with an apical stramineous margin to the tergites; areola acutely angulate at base, confluent with the areola and transversely lineolate, petiolarea partly transversely costate; abdomen truncate, sheaths of the ovipositor apparently twice as long as the apical truncature.

*Holotype*—♀, Ottawa, Ont., July 18, 1908, ex larva on spinach (A. Gibson); No. 1603 in the Canadian National Collection, Ottawa.

***Campoplex* (*Nemeritis*) *melanomerus* new species.**

Related to *C. (N.) erythromerus* Viereck.

*Male*. Length 4 mm.; compared with the original description of *C. (N.) uniformis* Vier. this differs as follows.—Antennae black throughout, fore and mid coxae black, stramineous at apex, fore and mid trochanters yellowish, mid femora yellowish, blackish on the inner aspect, their tibiae yellowish, darkened near base and at apex, hind femora blackish, hind tibiae blackish near base and at apex,

yellowish at base and in the middle of the extensor surface, middle of the flexor surface stramineous, hind tarsi blackish with the basal half of the hind basitarsi mostly whitish, tergites black throughout, plica yellowish; areola narrowly truncate at base, finely sculptured, confluent with the transversely costate petiolarea.

*Holotype*—♀, Oliver, B. C., May 26, 1921, (C. B. Garrett); No. 1602 in the Canadian National Collection, Ottawa.

**Campoplex (Nemeritis) lyonetae** new species.

Related to *C. (N.) minutus* Ashmead.

*Male*. Length 3 mm.; black, scape and pedicel brownish in front, mandibles and palpi mostly whitish, tegulae yellowish with a nearly colorless margin, fore coxae and trochanters whitish, rest of fore-legs pale stramineous like the mid legs beyond their coxae, mid coxae stramineous, brownish at base, mid tibiae and mid basitarsi partly whitish, hind coxae black, their proximal trochanters black, yellowish apically, hind distal trochanters whitish, hind femora dark stramineous, hind tibiae blackish near base and at apex, whitish at base and in the middle, hind tarsi brownish, their basitarsi with the basal third whitish, abdomen black, second tergite and basal two-thirds of third tergite brownish, plica yellowish; areola narrowly truncate, nearly angulate at base, shining, finely sculptured, confluent with the rugulose petiolarea.

*Holotype*—♂, Nelson, B. C., July 1, 1902, parasite on *Lyonetia speculella* Clem.; No. 1605 in the Canadian National Collection, Ottawa.

**Campoplex (Nemeritis) dolichourus** n. sp.

Related to *C. (N.) lyonetae* Viereck.

*Female*. Length 4 mm.; compared with the original description of *C. (N.) lyonetae* Vier. this differs as follows. Scape and pedicel yellowish, blackish behind, mandibles mostly dark stramineous, palpi pale yellowish, tegulae yellowish with a clear margin, legs including fore and mid coxae yellowish, stramineous, hind coxae black, hind tibiae paler than their femora, the extensor surface pale blackish near base and at apex, hind tarsi brownish with the first and second joints mostly pale stramineous, abdomen black, plica yellowish; areola almost heart shaped, rounded at base, finely reticulated, weakly separated from the more distinctly reticulated petiolarea; abdomen truncate, sheaths of the ovipositor a little more than twice as long as the apical truncature.

*Holotype*—♀, Oakville, Ont., July 3, 1900, from jar containing *Hoplostilia fletcherella* Fern. (D. Robertson); No. 1606 in the Canadian National Collection, Ottawa.

**Campoplex (Nemeritis) brachyurus** n. sp.

Related to *C. (N.) dolichourus* Viereck.

*Female*. Length 3 mm.; compared with the original description of *C. (N.) lyonetae* Vier. this differs as follows. Scape and pedicel yellowish, blackish behind, mandibles mostly yellow, palpi whitish, fore and mid coxae stramineous, yellowish at apex, their trochanters yellowish, rest of fore and mid legs dark stramineous, excepting their tarsi which are pale stramineous, brownish with the apical joint blackish, hind coxae black, pale at apex, their trochanters yellowish,

hind femora reddish with a blackish tinge, hind tibiae blackish near base and at apex, translucent yellowish at base and in the middle, hind tarsi blackish, their basitarsi pale at extreme base, lateral edge of second and third tergites and apical edge of second tergite, pale stramineous, apical truncature of abdomen yellowish; areola acute angled at base, shining, finely sculptured, confluent with the nearly transversely lineolate petiolarea.

*Holotype*—♀, Georgetown, Ont., August 31, 1893; No. 1604 in the Canadian National Collection, Ottawa.

*Paratype*—♀, data the same.

**Campoplex (Nemeritis) oculus n. sp.**

Related to *C. (N.) brachyurus* Viereck.

*Male*. Length 5 mm.; black, scape and pedicel pale yellow, the former with a black stripe above, the latter black above, flagel black throughout, mandibles mostly yellow, palpi pale yellowish, fore and mid legs, including coxae pale yellowish, almost whitish, hind coxae black, pale yellowish at apex, their trochanters, femora and tibiae mostly pale yellowish, the proximal trochanter blackish at base above, the extensor surface of their femora and the flexor surface of their tibiae faintly reddish, hind tarsi blackish with the basitarsi pale yellowish at base; abdomen black, plica mostly yellow; areola narrowly truncate at base, finely sculptured, shining, wider than long, apparently confluent with the petiolarea which is finely transversely lineolate.

*Holotype*—♂, Ontario, parasitic on canker worm; No. 1607 in the Canadian National Collection, Ottawa.

**Campoplex (Nemeritis) ocellatus n. sp.**

Related to *C. (N.) oculus* Viereck.

*Male*. Length 4 mm.; compared with the original description of *C. (N.) oculus* Vier. this differs as follows. Hind trochanters and femora entirely yellowish, their tibiae blackish near base and at apex, pale yellowish at base and in the middle; areola obtuse angled at base, longer than wide, confluent with the second lateral area and the petiolarea, finely sculptured, the petiolarea nearly transversely costate; first and second tergites with a pale apical edge.

*Holotype*—♂, Aylmer, Que., June 13, 1919, (J. McDunnough); No. 1608 in the Canadian National Collection, Ottawa.

**Campoplex (Nemeritis) concolor n. sp.**

Related to *C. (N.) ocellatus* Viereck.

*Female*. Length, 5 mm.; black, scape and pedicel brownish in front, rest of antennae black, basal half of mandibles mostly black, the apical half mostly yellow, palpi pale yellowish, tegulae yellow with a clear margin, coxae blackish to black, fore and mid trochanters yellowish, hind proximal trochanters black with the apical margin yellowish, their distal trochanters, brownish-yellow, rest of fore and mid legs dark stramineous, hind femora and tibiae reddish, their tarsi pale brownish stramineous, the joints darkest at apex, abdomen black, the first and second tergites with a pale apical margin, the following tergites brownish apically, plica partly dark yellowish; areola acute angled at base, apparently as long

as wide, finely sculptured, shining, confluent with the slightly coarser sculptured petiolarea; sheaths of the ovipositor a little more than twice as long as the apical truncature.

*Holotype*—♀, Sudbury, Ont., April 16, 1889; No. 1609 in the Canadian National Collection, Ottawa.

*Paratype*—♀, Eastern Ontario.

**Campoplex (Nemeritis) solus** n. sp.

Related to *C. (N.) concolor* Viereck.

*Female*. Length 4 mm.; compared with the original description of *C. (N.) concolor* Vier. as follows. Antennae black throughout, mandibles mostly yellow, yellow at base, coxae black, hind distal trochanters yellowish, mid femora and tibiae reddish, the latter yellowish at base, their femora blackish at base, hind femora reddish, blackish at base, their tibiae dark stramineous, brownish at apex, blackish near base, yellowish at base, hind tarsi dark brownish, their basitarsi yellowish at base, abdomen black, plica yellowish, third, fourth and fifth sternites with a basal black band, abdomen nearly fusiform, sheaths of the ovipositor approximately as long as the abdomen beyond the petiole.

*Holotype*—♀, Chilcotin, B. C., September 1, 1920, (E. R. Buckell); No. 1610 in the Canadian National Collection, Ottawa.

*Paratype*—♀, with the same data.

**Campoplex (Nemeritis) decoratus** n. sp.

Related to *N. trachas* Viereck.

*Female*. Length 5 mm.; compared with the original description of *C. (N.) concolor* Vier. this differs as follows. Antennae black throughout, mandibles mostly yellow, yellow at base, hind distal trochanters yellowish, extensor surface of fore and mid tibiae, whitish, hind femora reddish, blackish at base, their tibiae reddish on their flexor surface, their extensor surface, yellowish-white at base and in the middle, blackish near base and at apex, hind tarsi blackish, their basitarsi whitish, blackish at apex, their second joint pale on the basal half, blackish on the apical half, abdomen black, the third tergite apically with a narrow reddish margin; petiolarea partly transversely costate; abdomen nearly fusiform, exerted portion of sheaths nearly one-third the length of the abdomen.

*Holotype*—♀, Chilcotin, B. C., September 1, 1920, (E. R. Buckell); No. 1612 in the Canadian National Collection, Ottawa.

This may prove to be only a variety of *C. (N.) solus* Vier.

**Campoplex (Nemeritis) laevis** n. sp.

Related to *C. (N.) decoratus* Viereck.

*Female*. Length 4 mm.; black, antennae apparently black throughout except for the apical brownish edge of the pedicel, palpi whitish, tegulae yellowish with a clear margin, fore coxae black at base, mostly stramineous, fore and mid trochanters as well as hind distal pair yellow, rest of fore legs except end joint of their tarsi which is blackish, stramineous, like the mid femora, mid tibiae stramineous except on the extensor surface which is whitish save for a faint dark stain near base and an apical blackish annulus, mid tarsi pale excepting the end joint



which is blackish, mid and hind coxae black, hind, proximal trochanters blackish with an apical stramineous margin, hind femora reddish, their extensor surface darkened at apex, flexor surface of hind tibiae stramineous, their extensor surface whitish, blackish near base and at apex, hind tarsi blackish, the basal two-thirds of the first joint and base of the second joint, whitish, abdomen black, save for an apical obscurely brownish margin to the tergites, the brownish lateral margin of the tergites and the yellow plica; areola acute angled at base, finely reticulated, longer than wide, confluent with the transversely costate petiolarea; sheaths of the ovipositor longer than the truncature.

*Holotype*—♀, Saskatoon, Sask., May 23, 1924, (N. J. Atkinson); No. 1613 in the Canadian National Collection, Ottawa.

**Campoplex (*Nemeritis*) *trachas* n. sp.**

Related to *C. (N.) solus* Viereck.

*Male*. Length 4 mm.; compared with the original description of *C. (N.) concolor* Vier. this differs as follows. Antennae black, scape and pedicel apically stramineous, mandibles mostly yellow, yellow at base, coxae black, fore pair yellowish at apex, hind, distal trochanters yellow, fore and mid legs concolorous beyond the coxae, their femora almost reddish stramineous, their tibiae rather brownish stramineous with the extensor surface pale at base, their tarsi pale with the apical joint blackish, hind femora reddish, blackish at base, flexor surface of hind tibiae reddish, their extensor surface yellowish at base and in the middle, brownish near base and at apex, hind tarsi dark brownish, their basitarsi yellowish at base, abdomen black; areola mostly nearly reticulated like the petiolarea.

*Holotype*—♂, Cochrane, Alta., June 11, 1915, (E. H. Strickland); No. 1611 in the Canadian National Collection, Ottawa.

**Campoplex (*Nemeritis*) *Holmgreni*.**

*Nemeritis canescens* Grav. is here misplaced and = (*Nemeritis*) *Irechthis canescens* Grav.

(*Phaedroctonus*) *C. (N.) argyresthiae* Rohwer.

(*Limnerium*) *C. (N.) cupressi* Ashmead.

(*Phaedroctonus*) *C. (N.) minutus* Ashmead.

**Campoplex (*Diocetes*) *rosaceanae* n. sp.**

Related to *C. (D.) montanus* Ashmead.

*Female*. Length 5 mm.; black, antennae black throughout except for a pale apical margin to the scape and pedicel, mandibles mostly yellow, palpi whitish, tegulae yellowish with a nearly colorless margin, fore coxae blackish at base, mostly yellowish, mid coxae black, brownish and yellowish at apex, hind coxae black, fore and mid trochanters and hind distal trochanters yellowish, hind proximal trochanters black with an apical yellowish margin, rest of fore and mid legs mostly stramineous, their apical tarsal joints blackish, hind femora reddish, blackish at base, hind tibiae pale stramineous, blackish at apex and with the extensor surface blackish near base, hind tarsi black or blackish, their basitarsi with the base and the basal half of the flexor surface pale, abdomen black, with a yellow plica; areola rounded at base, wider than long, finely reticulated,

confluent with the transversely costate petiolarea, costulae rudimentary; abdomen obliquely truncate, nearly fusiform, sheaths of the ovipositor apparently twice as long as the truncature.

*Holotype*—♀, Vernon, B. C., June 23, 1923; ex pupa *Cacoecia rosaceana* (D. G. Gillespie); No. 1689 in the Canadian National Collection, Ottawa.

**Angitia (Diocetes) unicus** n. sp.

Related to *A. (D.) obliterated* Cresson.

*Male*. Length 6 mm.; black, antennae black except for the pale front of the scape and pedicel, mandibles mostly yellow, palpi whitish, tegulae yellowish with a pale margin, fore and mid coxae and all trochanters pale yellowish white, rest of fore and mid legs stramineous, end joint of fore and mid tarsi blackish, hind coxae black, stramineous at apex, hind femora reddish, their tibiae stramineous, blackish at apex and on the extensor surface blackish near base, abdomen black, apical margin of the tergites, excepting the sixth, more or less reddish or yellowish or both; fourth and following tergites pale along the lateral margins; areola truncate, broader at base than at apex, finely sculptured, confluent with the petiolarea through a narrow neck, petiolarea rather coarsely sculptured.

*Holotype*—♂, Ottawa, Ont., (W. H. Harrington); No. 1690 in the Canadian National Collection, Ottawa.

**Campoplex (Diocetes) Foerster).**

(*Ischnocerus*) *Campoplex (Diocetes) montanus* Ashmead.

(*Enytus*) *Campoplex (Diocetes) maculipes* Cameron.

(*Limnerium*) *Campoplex (Diocetes) eureka* Ashmead.

(*Limnerium*) *Campoplex (Diocetes) obliterated* Cresson.

**Campoplex (Holocremonus) grahami** n. sp.

Related to *C. (H.) metacomet* Viereck.

*Female*. Length 4 mm.; black, scape and pedicel yellow, black behind, flagel black, mandibles mostly yellow, palpi pale stramineous, tegulae yellowish, fore and mid coxae and all trochanters pale stramineous, rest of fore legs stramineous, mid tibiae and femora dark stramineous the former with the extensor surface at base and in the middle whitish, mid tarsi whitish, with the apical and penultimate joints brownish, hind coxae black, their femora reddish, blackish at apex, flexor surface of hind tibiae stramineous, elsewhere whitish at base and in the middle, blackish near base and at apex, hind tarsi blackish brown, their basitarsi pale at base, abdomen black, first tergite stramineous at apex, second tergite with the apical fourth mostly yellowish, third tergite with its apical third mostly reddish, sides of this tergite partly reddish, the following tergites reddish save for being black above with an apical stramineous margin; propodeum finely sculptured, with only the basalarea complete, areola defined only at base, acute angled, costulae incomplete; exerted part of the sheaths of the ovipositor nearly as long as the truncature of the abdomen.

*Holotype*—♀, Queen's Park, Aylmer, Que., August 25, 1924, (A. R. Graham); No. 1691 in the Canadian National Collection, Ottawa.

Named in honor of Mr. A. R. Graham.

(To be continued)

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